

## **DETAILED ACTION**

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Eamon Wall on 04/07/2008.

The claims have been amended as follows:

1. (Currently amended) A method of providing a fair exchange of messages to players of a distributed real-time multi-player game taking place over a communications network, said method comprising the steps of:

sending update messages generated by a game server toward said players, each update message having a respective update message number associated therewith;

receiving action messages from said players, wherein each action message received from a player comprises an indication of an update message with which the action message is associated and a reaction time associated with the action message, said reaction time being a difference between a reception time of ~~the~~ update message received for the player and a sending time of the action message sent by the player in response to the update message;

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computing, for each received action message, a respective delivery time for use in delivering the action message for processing by the game server, wherein ~~an~~ appropriate one of a plurality of delivery time formula for ~~[[an]]~~ the action message is utilized depending on whether the action messages arrive in order and whether the action messages arrive within their wait timeout periods; the plurality of delivery time formula comprising a first delivery time formula utilized when the action messages arrive in order and within their wait timeout periods, a second delivery time formula utilized when the action messages arrive out of order but within their wait timeout periods, and a third delivery time formula utilized when the action messages arrive outside their wait timeout periods; wherein a wait timeout period for a player is calculated based on an expected round trip time between a game server proxy and a player proxy; the game server proxy is operable in connection with said game server, the player proxy is operable in connection with said player.

queuing, in real-time, each received action message for use in delivering the action message for processing by the game server, wherein the queued action messages are arranged in an order of increasing update message number and are further arranged for each update message in an order of increasing reaction time; and delivering, in real-time, said queued action messages for processing by said game server.

2. (Currently amended) The method of claim 1, wherein ~~[[a]]~~ said game server proxy is operable in connection with said game server for receiving said action

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messages computing said delivery times for said action messages, queuing said action messages, and delivering said action message to said game server.

6. (Currently amended) The method of claim 1, wherein [[a]] said player proxy is operable in connection with said game server for receiving said update messages from said game server and forwarding said update messages to said game players, and for receiving said action messages from said game players and forwarding said action messages to said game server.

10. (Cancelled)

11. (Cancelled)

16. (Currently amended) The method of claim [[11]] 1, wherein the delivery time of an action message is calculated before the action message is queued, and recalculated upon new action message arrival and action message delivery when action messages arrive outside of the wait timeout period.

18. (Currently amended) The method of claim 1, wherein a window of update messages for which action messages are needed is indicated by the game server proxy to [[a]] the player proxy, the window being based on the determination by the game server proxy about when to stop accepting action messages corresponding to a particular update message.

19. (Cancelled)

20. (Cancelled)

22. (Currently amended) A system for a distributed real-time multi-player game, said system providing a fair exchange of messages to players of ~~[[a]]~~ the distributed real-time multi-player game taking place over a communications network, said system comprising:

a game server for sending update messages to said players and receiving action messages from said players;

wherein each update message has a respective update message number associated therewith;

wherein each action message comprises a reaction time associated with the action message, said reaction time being a difference between a reception time of ~~[[an]]~~ the update message received for the player and a sending time of the action message sent by the player in response to the update message; and  
a server proxy for delivering said action messages for processing by said game server in an order of increasing reaction time, said server proxy adapted for:

receiving said action messages from said players;

computing, for each received action message, a respective delivery time for use in delivering the action message for processing by the game server, wherein an ~~appropriate~~ one of a plurality of delivery time formula for ~~[[an]]~~ the action message is

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utilized depending on whether the action messages arrive in order and whether the action messages arrive within their wait timeout periods; the plurality of delivery time formula comprising a first delivery time formula utilized when the action messages arrive in order and within their wait timeout periods, a second delivery time formula utilized when the action messages arrive out of order but within their wait timeout periods, and a third delivery time formula utilized when the action messages arrive outside their wait timeout periods; wherein a wait timeout period for a player is calculated based on an expected round trip time between a game server proxy and a player proxy; the game server proxy is operable in connection with said game server, the player proxy is operable in connection with said player.

queuing, in real-time, each received action message for use in delivering the action message for processing by the game server, wherein the queued action messages are arranged in an order of increasing update message number and are further arranged for each update message in an order of increasing reaction time; and

delivering, in real-time, said queued action messages for processing by said game server.

23. (Currently amended) The system of claim 22, further including a plurality of player proxies, each of said player proxies adapted to:

receive [[an]] said update message from said game server at said player proxy; record [[a]] said reception time of said update message at said player proxy; and

calculate [[a]] said reaction time using said reception time, said reaction time transmitted by said player proxy in connection with [[an]] said action message.

24. (Currently amended) The system of claim 23, wherein each of said player proxies is adapted to send [[an]] said update message number, said reaction time and an action message number with [[an]] said action message.

26. (Cancelled)

27. (Currently amended) The system of claim 22, wherein said server proxy, when [[an]] said action message is received, computes a position in a queue where said action message should be inserted and a local delivery time at which said action message is to be delivered to said game server.

### ***Reasons for Allowance***

The following is an examiner's statement of reasons for allowance:

Claims 1-9, 12, 14, 14-18, 22-25, 27 are allowed. The prior art of record does not teach the claimed invention, as follows.

For independent claims 1 and 22, the prior art does not teach:

“receiving action messages from said players comprising a reaction time associated with the action message, said reaction time being a difference between a

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reception time of an update message received for the player and a sending time of the action message sent by the player in response to the update message;

computing, for each received action message, a respective delivery time for use in delivering the action message for processing by the game server, wherein one of a plurality of delivery time formula for the action message is utilized depending on whether the action messages arrive in order and whether the action messages arrive within their wait timeout periods;

queuing, in real-time, each received action message for use in delivering the action message for processing by the game server, wherein the queued action messages are arranged in an order of increasing update message number and are further arranged for each update message in an order of increasing reaction time; and

delivering, in real-time, said queued action messages for processing by said game server.”

The prior art of record fails to teach or suggest queuing and delivering action messages to be processed by a game server according to different formula for calculating action message delivery time such that the queued action messages are arranged in an order of increasing update message number and are further arranged for each update message in an order of increasing reaction time; thereby providing fair ordering of action messages from players of a real-time multiplayer game.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is included in form PTO 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu T. Hoang whose telephone number is 571-270-1253. The examiner can normally be reached on Monday-Thursday, 8 a.m.-5 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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HH

/Kenny S Lin/

Primary Examiner, Art Unit 2452